BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Plymouth

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Produced in 2004

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

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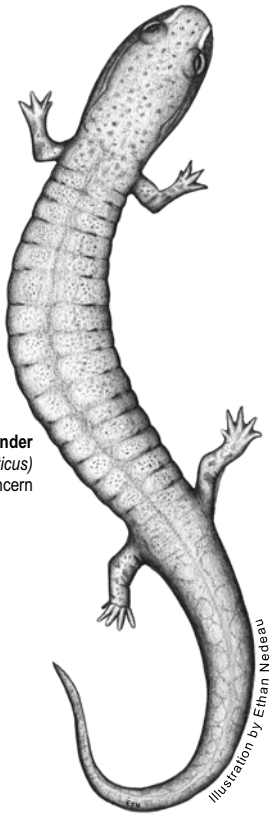
* Depending on the location of Core Habitats, your city or town may not have all of these sections.



Spring Salamander
(Gyrinophilus porphyriticus)
Species of Special Concern

Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.

Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

For more information on rare species and natural communities, please see our fact sheets online at ***www.nhesp.org***

BioMap and Living Waters:
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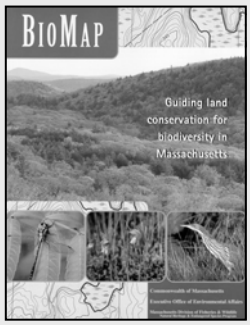
Introduction

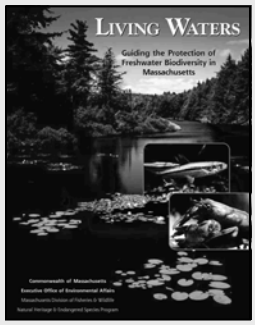
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, ***BioMap*** and ***Living Waters***. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate ***Core Habitats*** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the ***BioMap*** and ***Living Waters*** reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the ***riparian areas***, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as ***Supporting Natural Landscape*** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was

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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, ***Critical Supporting Watersheds*** highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap

	Species and Verified Natural Community Types	
Biodiversity Group	**Included in BioMap**	**Total Statewide**
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types

Living Waters

	Species	
Biodiversity Group	**Included in Living Waters**	**Total Statewide**
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- ***Endangered*** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- ***Threatened*** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- ***Special Concern*** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial ***watch list*** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- ***Critically Imperiled*** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- ***Imperiled*** communities typically have 6-20 sites or few remaining acres in the state.
- ***Vulnerable*** communities typically have 21-100 sites or limited acreage across the state.
- ***Secure*** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The ***Massachusetts Natural Heritage Atlas*** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific ***fact sheets*** at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone *508-792-7270, Ext. 200*

by Fax: *508-792-7821*

by Email: *natural.heritage@state.ma.us*.

by Mail: *North Drive*
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - Natural Heritage Atlas, and more!

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BioMap: Species and Natural Communities

Plymouth

Core Habitat BM1120

Natural Communities

Common Name	Scientific Name	Status
Estuarine Intertidal: Brackish Tidal Marsh		Critically Imperiled
Estuarine Intertidal: Salt Marsh		Vulnerable

Vertebrates

Common Name	Scientific Name	Status
Arctic Tern	*Sterna paradisaea*	Special Concern
Bird Migration Habitat		----------
Coastal Waterbird Habitat		----------
Common Tern	*Sterna hirundo*	Special Concern
Least Tern	*Sterna antillarum*	Special Concern
Piping Plover	*Charadrius melodus*	Threatened
Roseate Tern	*Sterna dougallii*	Endangered
Spotted Turtle	*Clemmys guttata*	Special Concern

Core Habitat BM1178

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

Plants

Common Name	Scientific Name	Status
New England Boneset	*Eupatorium leucolepis var novae-angliae*	Endangered
Plymouth Gentian	*Sabatia kennedyana*	Special Concern
Reticulate Nut-Sedge	*Scleria reticularis*	Watch Listed

Invertebrates

Common Name	Scientific Name	Status
Attenuated Bluet	*Enallagma daeckii*	Special Concern
Comet Darner	*Anax longipes*	Special Concern
New England Bluet	*Enallagma laterale*	Special Concern
Pine Barrens Bluet	*Enallagma recurvatum*	Threatened
Water-Willow Stem Borer	*Papaipema sulphurata*	Threatened

Vertebrates

Common Name	Scientific Name	Status
Blanding's Turtle	*Emydoidea blandingii*	Threatened
Eastern Box Turtle	*Terrapene carolina*	Special Concern
Spotted Turtle	*Clemmys guttata*	Special Concern

Core Habitat BM1187

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

Plants

Common Name	Scientific Name	Status
Long-Beaked Bald-Sedge	*Rhynchospora scirpoides*	Special Concern
New England Boneset	*Eupatorium leucolepis var novae-angliae*	Endangered
Plymouth Gentian	*Sabatia kennedyana*	Special Concern

Invertebrates

Common Name	Scientific Name	Status
Pine Barrens Bluet	*Enallagma recurvatum*	Threatened

BioMap: Species and Natural Communities

Plymouth

Core Habitat BM1188

Invertebrates

Common Name	Scientific Name	Status
Barrens Buckmoth	*Hemileuca maia*	Special Concern

Core Habitat BM1190

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled
Pitch Pine - Scrub Oak Community		Imperiled
Red Maple Swamp		Secure
Sandplain Heathland		Critically Imperiled
Scrub Oak Shrubland		Critically Imperiled

Plants

Common Name	Scientific Name	Status
Broom Crowberry	*Corema conradii*	Special Concern
Inundated Horned-Sedge	*Rhynchospora inundata*	Threatened
Long-Beaked Bald-Sedge	*Rhynchospora scirpoides*	Special Concern
New England Blazing Star	*Liatris scariosa var. novae-angliae*	Special Concern
New England Boneset	*Eupatorium leucolepis var novae-angliae*	Endangered
Plymouth Gentian	*Sabatia kennedyana*	Special Concern
Pondshore Knotweed	*Polygonum puritanorum*	Special Concern
Pondshore-dodder	*Cuscuta coryli*	Watch Listed
Redroot	*Lachnanthes caroliana*	Special Concern
Reticulate Nut-Sedge	*Scleria reticularis*	Watch Listed
Short-Beaked Bald-Sedge	*Rhynchospora nitens*	Threatened
Swamp Oats	*Sphenopholis pensylvanica*	Threatened
Terete Arrowhead	*Sagittaria teres*	Special Concern

Torrey's Beak-Sedge	*Rhynchospora torreyana*	Endangered
Walter's Sedge	*Carex striata*	Endangered
Wright's Panic-grass	*Dichanthelium wrightianum*	Special Concern

Invertebrates

Common Name	Scientific Name	Status
Attenuated Bluet	*Enallagma daeckii*	Special Concern
Barrens Buckmoth	*Hemileuca maia*	Special Concern
Barrens Daggermoth	*Acronicta albarufa*	Threatened
Blueberry Sallow	*Apharetra dentata*	----------
Buchholz's Gray	*Hypomecis buchholzaria*	Endangered
Chain Dot Geometer	*Cingilia catenaria*	Special Concern
Coastal Heathland Cutworm	*Abagrotis nefascia benjamini*	Special Concern
Coastal Plain Apamea Moth	*Apamea mixta*	Special Concern
Coastal Swamp Metarranthis Moth	*Metarranthis pilosaria*	Special Concern
Comet Darner	*Anax longipes*	Special Concern
Drunk Apamea Moth	*Apamea inebriata*	Special Concern
Frosted Elfin	*Callophrys irus*	Special Concern
Gerhard's Underwing Moth	*Catocala herodias gerhardi*	Special Concern
Hessel's Hairstreak	*Callophrys hesseli*	Special Concern
Melsheimer's Sack Bearer	*Cicinnus melsheimeri*	Threatened
New England Bluet	*Enallagma laterale*	Special Concern
Pale Green Pinion Moth	*Lithophane viridipallens*	Special Concern
Pine Barrens Bluet	*Enallagma recurvatum*	Threatened
Pine Barrens Itame	*Itame sp. 1 near inextricata*	Special Concern
Pine Barrens Zale	*Zale sp. 1 near lunifera*	Special Concern
Pine Barrens Zanclognatha	*Zanclognatha martha*	Threatened
Pink Sallow	*Psectraglaea carnosa*	Special Concern
Pitcher Plant Borer Moth	*Papaipema appassionata*	Threatened

Purple Tiger Beetle	*Cicindela purpurea*	Special Concern
Sensitive Rare Invertebrate		
Slender Clearwing Sphinx Moth	*Hemaris gracilis*	Special Concern
Spartina Borer Moth	*Spartiniphaga inops*	Special Concern
Spiny Oakworm	*Anisota stigma*	Special Concern
Unexpected Cycnia	*Cycnia inopinatus*	Threatened
Water-Willow Stem Borer	*Papaipema sulphurata*	Threatened
Waxed Sallow Moth	*Chaetaglaea cerata*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
Eastern Box Turtle	*Terrapene carolina*	Special Concern
Grasshopper Sparrow	*Ammodramus savannarum*	Threatened
Grassland Bird Habitat		----------
Northern Red-bellied Cooter	*Pseudemys rubriventris*	Endangered
Pine Barrens Bird Habitat		----------
Spotted Turtle	*Clemmys guttata*	Special Concern

Core Habitat BM1192

Natural Communities

Common Name	Scientific Name	Status
Coastal Atlantic White Cedar Swamp		Imperiled

Invertebrates

Common Name	Scientific Name	Status
Hessel's Hairstreak	*Callophrys hesseli*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
Northern Red-bellied Cooter	*Pseudemys rubriventris*	Endangered
Spotted Turtle	*Clemmys guttata*	Special Concern

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BioMap: Species and Natural Communities

Plymouth

Core Habitat BM1193

Vertebrates

Common Name	Scientific Name	Status
Least Bittern	*Ixobrychus exilis*	Endangered

Core Habitat BM1200

Natural Communities

Common Name	Scientific Name	Status
Forest Seep Community		Secure

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1209

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1214

Natural Communities

Common Name	Scientific Name	Status
Coastal Forest/Woodland		Vulnerable

Core Habitat BM1222

Natural Communities

Common Name	Scientific Name	Status
Coastal Forest/Woodland		Vulnerable

Vertebrates

Common Name	Scientific Name	Status
Bird Migration Habitat		----------
Least Tern	*Sterna antillarum*	Special Concern
Piping Plover	*Charadrius melodus*	Threatened

Core Habitat BM1234

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1235

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1236

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

BioMap: Core Habitat Summaries

Plymouth

Core Habitat BM1120

This Core Habitat contains a large Salt Marsh surrounded by many high-quality natural communities, including barrier beaches and mud flats. The sandy Plymouth and Duxbury Beaches are among the state's most important breeding sites for Piping Plovers, and both sites also support nesting Least Terns. These areas provide habitat to other nesting coastal waterbirds, as well as some of the most important migration stopover habitat in New England for a variety of different shorebirds.

Natural Communities

This is one of a series of Core Habitats that contain the largest acreage of Estuarine Intertidal Salt Marsh between Boston and Cape Cod. The Salt Marsh community type is a graminoid-dominated, tidally flooded coastal community with several vegetative zones. Salt Marshes form in areas subject to oceanic tides, but sheltered from wave energy. Here the sheer size of the natural community assures an abundance of microhabitats and mix of conditions that are important for plants and animals alike. This Salt Marsh is surrounded by many other high-quality natural communities including barrier beaches and mud flats. This Core Habitat also contains a moderately-sized, seepage-influenced variant of the Estuarine Intertidal Brackish Tidal Marsh. The Brackish Tidal Marsh community is often found in the brackish stretches of coastal rivers, and consists of mixed herbaceous vegetation that is flooded by daily tides. The community is structurally diverse, including high marsh and low marsh.

Vertebrates

The sandy beaches of Plymouth Beach and Duxbury Beach are among the state's most important breeding sites for Piping Plovers, and both sites also support nesting Least Terns. Plymouth Beach was formerly one of the most important Common Tern colonies in the state, and Roseate Terns, Arctic Terns, Least Terns, Laughing Gulls, Herring Gulls, Great Black-backed Gulls, and occasionally Black Skimmers have also nested here. In 1999, the colony was disrupted by foxes, and now persists in a much reduced state. Once predator removal is accomplished at this site, it may regain its former importance. Clarks Island, until the late 1980s, was one of the most important heronries in Massachusetts. It supported a diverse breeding colony of Double-crested Cormorants, Black-crowned Night-Herons, Glossy Ibises, Little Blue Herons, Snowy Egrets, Great Egrets, Herring Gulls, and Great Black-backed Gulls. Destruction of nesting trees and shrubs led to the demise of the heronry. Clarks Island may support breeding herons and egrets in the future. Protecting of this site as conservation land is recommended. Potential threats to nesting coastal waterbirds include: habitat alteration and loss, human disturbance (including off-road vehicle use and dogs), and predation. Annual protection from these threats is needed.

This complex of habitats also provides some of the most important migration stopover habitat in New England for a variety of shorebirds that nest in arctic and subarctic regions of North America. Broad expanses of intertidal sand flats that are exposed at low tide in Plymouth Bay, Plymouth Harbor, and Duxbury Bay provide excellent feeding habitat for large flocks of migrating shorebirds, especially from mid-July through October. At high tide, when intertidal feeding habitats are unavailable, large numbers of migrating shorebirds rest on undisturbed portions of Plymouth Long Beach and Duxbury Beach. An annual conservation need is the protection of migrating shorebirds and their resting and feeding habitats from disturbance caused by pedestrian beach-goers, dogs, and off-road vehicles.

BioMap: Core Habitat Summaries

Plymouth

Core Habitat BM1178

This Core Habitat is one of the best biodiversity conservation opportunities remaining along the South Shore due to its large size, minimal fragmentation, and proximity to similar habitat in Myles Standish State Forest. The area supports the globally rare Pine Barrens Bluet damselfly and the Water-willow Stem Borer moth, as well as important populations of two globally rare plant species. The diverse landscape provides significant habitat for the Eastern Box Turtle and other rare reptiles and amphibians. Apart from the Kingston State Forest, this Core Habitat appears to be completely unprotected, and portions of it are currently being developed.

Natural Communities

In Kingston, this Core Habitat contains a high-quality Coastal Plain Pondshore community. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. While the community here is within the zone of groundwater contribution of two public water supply wells, the pondshore community is large, in close proximity to four other Coastal Plain Pondshores, unaffected by cranberry operations, and well-buffered within the surrounding Mixed Oak-Pine Forest.

Plants

This Core Habitat is very significant for two rare plant species. It contains one of the state's largest populations of the Endangered and globally rare New England Boneset, a species which is only found in Massachusetts, Rhode Island, and New York. Several populations of another globally rare species, Plymouth Gentian, are found scattered across this Core Habitat.

Invertebrates

This Core Habitat includes Coastal Plain ponds such as Indian Pond, Muddy Pond, Smelt Pond, Pratt Pond, Goose Pond, Ricketts Pond, and a number of smaller ponds, all of which are important habitat for rare dragonflies such as the Comet Darner and rare damselflies such as the Pine Barrens Bluet. The Pine Barrens Bluet is endemic to the Coastal Plain of the Northeast and is only found in southeastern Massachusetts and in the pine barrens of New Jersey. The Coastal Plain pondshores and other wetlands within this Core Habitat are also habitat for the Water-willow Stem Borer moth, a Threatened species that is found nowhere in the world outside of Massachusetts.

Vertebrates

This Core Habitat includes upland forest, small scattered wetlands, small ponds, and a relatively high density of Certified Vernal Pools. The area encompasses significant habitat for Eastern Box Turtles. The wetlands and associated vernal pools provide habitat for other rare reptiles and amphibians, such as Spotted Turtles, Blanding's Turtles, and probably for Four-toed Salamanders and Blue-spotted Salamanders as well. This Core Habitat also contains forest bird habitat and migration habitat near the coast for terrestrial birds. Much of this area is unprotected, and the habitat here has been eroded by recent development along the western, northern, and eastern sides.

BioMap: Core Habitat Summaries

Plymouth

Core Habitat BM1187

Natural Communities

This Core Habitat contains a Coastal Plain Pondshore community that includes many state-listed plant species. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. While the community here is within the zone of groundwater contribution to a public water supply well, it is partially buffered, far from cranberry operations, and has moderate off-road-vehicle use.

Plants

This Core Habitat contains a Coastal Plain pondshore with very large populations of both the Endangered and globally rare New England Boneset and the Long-Beaked Bald-Sedge (Species of Special Concern).

Invertebrates

Triangle Pond is important habitat for the Pine Barrens Bluet damselfly. Although surrounded by encroaching development, this area is within dispersal distance of other Core Habitats for the Pine Barrens Bluet, including areas in Kingston and Plymouth. This Core Habitat appears to be currently unprotected.

Core Habitat BM1188

Invertebrates

This Core Habitat consists of oak-pine forest growing on the dry, sandy soil of the northern portion of the Pine Hills that is habitat for the Barrens Buckmoth and likely other rare invertebrates. Formerly contiguous with Core Habitat BM1190 that includes Myles Standish State Forest and vicinity to the southwest, this Core Habitat is now isolated by the Pine Hills mega-development between it and Myles Standish. This Core Habitat appears to be currently unprotected.

BioMap: Core Habitat Summaries

Plymouth

Core Habitat BM1190

This Core Habitat, centered on Myles Standish State Forest, contains the largest contiguous area of the globally significant Pitch Pine-Scrub Oak natural community remaining in the Northeast. This and other natural communities within the Core Habitat support a diversity of rare plants and animals, including no fewer than 33 rare invertebrate species of moths, butterflies, dragonflies, damselflies, and tiger beetles, as well as several globally rare plants adapted to Coastal Plain pondshores. The Core Habitat supports rare birds, salamanders, and turtles, including state's largest known population of the Northern Red-bellied Cooter turtle. The size and quality of this Core Habitat make it the best hope for the long-term survival of rare pine barrens species in New England. Although anchored by the large Myles Standish State Forest, the majority of this Core Habitat remains unprotected.

Natural Communities

This large Core Habitat contains the globally significant Pitch Pine-Scrub Oak community centered in Myles Standish State Forest. At almost 17,000 acres, this is the largest of its kind remaining in the Northeast. Pitch Pine-Scrub Oak communities are globally rare, fire dependant, shrub-dominated communities with scattered to dense trees. They provide habitat for many rare species, and develop on dry, poor soils, usually made up primarily of sand. This Core Habitat includes many other, smaller, rare community types within the predominant Pitch Pine-Scrub Oak community, including 15 acres of Scrub Oak Shrublands and 50 acres of Sandplain Heathlands in various-sized frost pockets and openings. This entire complex of natural communities is fire dependent and supports many fire-adapted species. Also, over two dozen Coastal Plain Pondshore communities of various sizes and quality are scattered throughout the Core Habitat. All of these natural communities are associated with state-listed plant and animal species.

Plants

This Core Habitat is rich in rare plant species adapted to the shorelines of Coastal Plain ponds. Two of the most viable populations in the state of the globally rare New England Boneset are found along pondshores in this Core Habitat, as are five outstanding populations of Terete Arrowhead (Species of Special Concern). Several rare and interesting members of the sedge family are found here, including four species of rare beak-sedges, one Endangered sedge species, and an uncommon nut-rush. The beautiful Plymouth Gentian, while abundant in this Core Habitat area, is a rare species globally.

Invertebrates

This area is Core Habitat for no fewer than 33 invertebrate species that are listed as Endangered, Threatened, or Species of Special Concern in Massachusetts, including 27 species of moths and butterflies, four species of dragonflies and damselflies, and two species of tiger beetles. Three of these species are found nowhere else in Massachusetts, and many of them have their largest and most viable populations within this Core Habitat. Besides barrens species such as the Persius Duskywing butterfly, Melsheimer's Sack Bearer moth, and the Barrens Daggermoth, this Core Habitat includes many other habitats for rare invertebrates, including heathlands inhabited by species such as the Slender Clearwing Sphinx moth and the Pink Sallow moth; acidic shrub swamps and bogs that are habitat for the Pale Green Pinion moth, the Coastal Swamp Metarranthis moth, and the Water-willow Stem Borer moth; and Coastal Plain ponds inhabited by the Comet Darner dragonfly and the Pine Barrens Bluet damselfly.

Vertebrates

This Core Habitat encompasses Myles Standish State Forest and over nine square miles of uplands, wetlands, ponds, and cranberry bogs. The area contains habitat for the largest known population of the Northern Red-bellied Cooter turtle (formerly known as the Plymouth Red-bellied Turtle) in the state. Given the large size of the Core Habitat, it also may be one of the most important areas for the Eastern Box Turtle in the state, and it contains habitat for Spotted Turtles, and likely Four-toed and Blue-spotted Salamanders. It also contains some of the largest areas of pitch pine - scrub oak bird habitat remaining in New England. The managed grasslands at Plymouth Municipal Airport provide habitat for Grasshopper Sparrows and other grassland birds. Annual or bi-annual mowing is needed to maintain grassland habitat at the airport, with minimal mowing between May 1 and July 31 to reduce the mortality of eggs and chicks.

Core Habitat BM1192

This Core Habitat in Carver, Kingston, and Plymouth encompasses interconnected wetlands that support Spotted Turtles and Northern Red-bellied Cooter turtles. It also contains a sizeable Coastal Atlantic White Cedar Swamp that provides habitat for the rare Hessel's Hairstreak butterfly.

Natural Communities

This Core Habitat contains a moderate-sized Coastal Atlantic White Cedar Swamp, mostly in Carver, with an arm extending into Kingston. Coastal Atlantic White Cedar Swamps are acidic, low nutrient basin swamps dominated by Atlantic White Cedar in the overstory and a mixture of species in the understory. This community type typically occurs in basins on the Atlantic Coastal Plain. It provides excellent winter habitat for deer, breeding habitat for amphibians, as well as habitat for invertebrates.

Invertebrates

This Core Habitat includes an Atlantic White Cedar Swamp in the northeast corner of Carver that provides unfragmented habitat for Hessel's Hairstreak butterfly, which has been known to inhabit this swamp for over 35 years. This Core Habitat is located less than 5 km from Core Habitat to the south, also habitat for Hessel's Hairstreak, which may allow for occasional dispersal of butterflies between these two sites. The cedar swamp habitat here appears to be currently unprotected.

Vertebrates

This is an elongate Core Habitat encompassing connected wetlands, ponds, and cranberry bogs that support populations of Northern Red-bellied Cooter turtles (formerly known as Plymouth Red-bellied Turtles) and Spotted Turtles. The relatively narrow shape of this Core Habitat and its proximity to several roads means that turtles here may be vulnerable to road mortality.

Core Habitat BM1193

Vertebrates

This Core Habitat delineates a pond with an emergent brackish marsh at the north end of the Eel River, which provides marsh bird habitat for species such as the Least Bittern. Protection efforts should preserve both the wetlands and adjacent uplands to buffer against noise and visual disturbance and to maintain water quality and the current hydrologic conditions.

Core Habitat BM1200

Natural Communities

This small Core Habitat contains the best example of a Forest Seep community in southeastern Massachusetts. Forest Seeps are hardwood forests found on wet slopes, where groundwater seeps out of the earth. The overstory is similar to that of the surrounding forest, but many typical wetland ferns, shrubs, and other plants occur as well.

Core Habitat BM1214

Natural Communities

This Coastal Forest, although small, remains a high-quality community due to its absence of invasive exotic plant species. Coastal Forests are mixed deciduous communities, and are often shorter than forests further inland, but taller than maritime forests. They may have dense shrubs and vines. This community type is found in sheltered areas along the coast.

Core Habitat BM1222

Natural Communities

This Core Habitat contains several small Coastal Forests of moderate quality. Despite occurring in several separate pieces around the Coastal Salt Pond, these Coastal Forests are well-buffered by naturally forested land. Coastal Forests are mixed deciduous communities, and are often shorter than forests further inland, but taller than maritime forests. They may have dense shrubs and vines. This community type is found in sheltered areas along the coast.

Vertebrates

This Core Habitat encompasses Piping Plover and Least Tern breeding habitat on the beaches at the entrance to Ellisville Harbor, the salt marsh and small estuary at Ellisville, and the adjacent old fields and upland forest. The area provides migration and wintering habitat for waterfowl, feeding and migration habitat for wading birds and shorebirds, and coastal migration habitat for songbirds.

Core Habitat BM1236

Natural Communities

This Coastal Plain Pondshore community is part of a cluster of ponds associated with rare plant species. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. This pond is quite close to a cranberry operation and may be affected by water withdrawal and pollution.

Living Waters: Species and Habitats

Plymouth

Core Habitat LW055

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Core Habitat LW056

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Core Habitat LW057

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Core Habitat LW058

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Core Habitat LW105

Fishes

Common Name	Scientific Name	Status
Bridle Shiner	*Notropis bifrenatus*	Special Concern

Core Habitat LW133

Fishes

Common Name	Scientific Name	Status
American Brook Lamprey	*Lampetra appendix*	Threatened
Bridle Shiner	*Notropis bifrenatus*	Special Concern

Living Waters: Species and Habitats

Plymouth

Core Habitat LW143

Exemplary Habitats

Common Name	Scientific Name	Status
Fish Habitat		----------

Core Habitat LW184

Plants

Common Name	Scientific Name	Status
Acadian Quillwort	*Isoetes acadiensis*	Endangered

Core Habitat LW219

Invertebrates

Common Name	Scientific Name	Status
Tidewater Mucket	*Leptodea ochracea*	Special Concern
Triangle Floater	*Alasmidonta undulata*	Special Concern

Core Habitat LW220

Invertebrates

Common Name	Scientific Name	Status
Tidewater Mucket	*Leptodea ochracea*	Special Concern
Triangle Floater	*Alasmidonta undulata*	Special Concern

Core Habitat LW248

Plants

Common Name	Scientific Name	Status
Acadian Quillwort	*Isoetes acadiensis*	Endangered

Core Habitat LW281

Plants

Common Name	Scientific Name	Status
Resupinate Bladderwort	*Utricularia resupinata*	Threatened

Core Habitat LW283

Plants

Common Name	Scientific Name	Status
Resupinate Bladderwort	*Utricularia resupinata*	Threatened

Core Habitat LW284

Plants

Common Name	Scientific Name	Status
Resupinate Bladderwort	*Utricularia resupinata*	Threatened

Core Habitat LW332

Exemplary Habitats

Common Name	Scientific Name	Status
Fish Habitat		----------

Plants

Common Name	Scientific Name	Status
American Waterwort	*Elatine americana*	Endangered

Core Habitat LW339

Exemplary Habitats

Common Name	Scientific Name	Status
Fish Habitat		----------

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http://www.nhesp.org

Invertebrates

Common Name	Scientific Name	Status
Eastern Pondmussel	*Ligumia nasuta*	Special Concern
Tidewater Mucket	*Leptodea ochracea*	Special Concern

Fishes

Common Name	Scientific Name	Status
Bridle Shiner	*Notropis bifrenatus*	Special Concern

Core Habitat LW340

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Core Habitat LW349

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

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Living Waters: Core Habitat Summaries

Plymouth

Core Habitat LW055

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. New Long Pond is one of the few such ponds that has little surrounding development and is removed from cranberry agriculture. Located within Myles Standish State Forest, New Long Pond is a large, sandy-bottomed pond. Its freshwater habitats may be threatened by bank erosion due to the use of off-road vehicles.

Core Habitat LW056

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Three Cornered Pond and Round Pond are examples of such ponds that have little surrounding development and are removed from cranberry agriculture. Located within Myles Standish State Forest, the habitats in these ponds may be threatened by water drawdowns due to wells in the region.

Core Habitat LW057

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Little Widgeon Pond is one of the few such ponds that has little surrounding development and is removed from cranberry agriculture. Located within the northern part of Myles Standish State Forest, Little Widgeon Pond is moderately deep and surrounded by emergent vegetation. Roads and recreational activities in the area have the potential to impact these aquatic habitats.

Core Habitat LW058

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Clam Pudding Pond is one of the few such ponds that has little surrounding development and is removed from cranberry agriculture. The freshwater habitats of Clam Pudding Pond may be threatened by recreational use and future development.

Core Habitat LW105

This Core Habitat supports one of three known populations of Bridle Shiner in the South Coastal Watershed. This fish Species of Special Concern is thought to be in decline in eastern Massachusetts as it was found at only 23% of its former sites in recent surveys. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes. The Bridle Shiner population in Bartlett Pond has persisted at least since 1956. This pond also contains habitat for Alewife, a fish that spends much of its life in coastal waters but returns to freshwaters to spawn (breed).

Living Waters: Core Habitat Summaries

Plymouth

Core Habitat LW133

This Core Habitat contains habitats for two rare fish species, the American Brook Lamprey and the Bridle Shiner. There are only 12 known populations of the Threatened American Brook Lamprey within the state; this site supports the only known population in the South Coastal watershed. This primitive, eel-like fish species has a skeleton made of cartilage. It is generally an indicator of clean, silt-free water, as it needs clean gravel in riffle habitats to spawn (breed). The Bridle Shiner is Species of Special Concern that is thought to be in decline in eastern Massachusetts as it was found at only 23% of its former sites in recent surveys. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes. This site also contains habitat for Alewife, a fish that spends much of its life in coastal waters but returns to freshwaters to spawn (breed). Protecting the undeveloped riparian lands adjacent to the Core Habitat and controlling sediment runoff from nearby development, roads, and agricultural areas will help maintain the quality of this habitat.

Core Habitat LW143

This section of Red Brook provides habitat for salter (sea-running) Brook Trout and American Eels. This brook is also spawning (breeding) habitat for Blueback Herring, which migrates from coastal waters to moderately flowing freshwaters with rocky substrates for spawning. Alewife also uses this stream as they pass through on the way to their upstream lake spawning habitats. These migrating fish species are important components of Massachusetts' aquatic biodiversity.

Core Habitat LW184

The sandy pond bottom of Fearing Pond supports a population of the Endangered Acadian Quillwort. Quillworts are primitive, submerged freshwater plants, which are so-named for their spiky, quill-like leaves rising from their base.

Core Habitat LW219

Great South Pond is a nearly 300-acre natural pond. It has served as a secondary water supply for the Town of Plymouth, and thus received little swimming or boating use. Its clean, clear waters support robust populations of five of the state's twelve freshwater mussel species, including the rare Tidewater Mucket and the Triangle Floater.

Core Habitat LW220

Halfway Pond is a roughly 230-acre warmwater pond with a shoreline that is lightly developed. Five of the state's twelve freshwater mussel species, including the rare Tidewater Mucket and Triangle Floater, have been found in the sandy bottom of this pond amidst sparse vegetation.

Core Habitat LW248

The sandy pond bottom of Curlew Pond supports a population of the Endangered Acadian

Quillwort. Quillworts are primitive, submerged freshwater plants, which are so-named for their spiky, quill-like leaves rising from their base.

Core Habitat LW281

One of only nine known populations of the rare Resupinate Bladderwort in the state inhabits the peaty margin of Big West Pond. This tiny plant is usually submerged underwater, and purple flowers are produced only when the habitat is exposed during periods of extremely low water. Bladderworts are carnivorous plants, trapping tiny aquatic animals in their pouch-like "bladders." Native freshwater plants like the Resupinate Bladderwort are an important component of aquatic communities, and warrant conservation attention if we are to maintain healthy freshwater ecosystems.

Core Habitat LW283

One of only nine known populations of the rare Resupinate Bladderwort in the state inhabits the peaty margin of Kings Pond. This tiny plant is usually submerged underwater, and purple flowers are produced only when the habitat is exposed during periods of extremely low water. Bladderworts are carnivorous plants that trap tiny aquatic animals in their pouch-like "bladders." Native freshwater plants like the Resupinate Bladderwort are an important component of aquatic communities, and warrant conservation attention if we are to maintain healthy freshwater ecosystems.

Core Habitat LW284

One of only nine known populations of the rare Resupinate Bladderwort in the state inhabits the peaty margin of Whites Pond. This tiny plant is usually submerged underwater, and purple flowers are produced only when the habitat is exposed during periods of extremely low water. Bladderworts are carnivorous plants, trapping tiny aquatic animals in their pouch-like "bladders." Native freshwater plants like the Resupinate Bladderwort are an important component of aquatic communities, and warrant conservation attention if we are to maintain healthy freshwater ecosystems.

Core Habitat LW332

A population of the Endangered American Waterwort, a small and inconspicuous plant of shallow waters, grows along the shores of the Agawam River. This disjunct Core Habitat also supports one of the most diverse anadromous fish runs in the Buzzards Bay Watershed. Anadromous fishes are those that migrate from coastal waters into fresh waters to spawn (breed). The most downstream site is a spawning area for American Shad, Rainbow Smelt, and White Perch. Upstream, Glen Charlie Pond supports Alewife spawning. These migrating fish species are important components of Massachusetts' aquatic biodiversity. Protecting the surrounding undeveloped riparian areas and controlling sediment runoff from developed areas will help maintain these key freshwater habitats.

Core Habitat LW339

Great Herring Pond is a 376-acre warmwater pond that supports a diverse group of freshwater

mussels. The pond supports six of the state's twelve mussel species, including the rare Tidewater Mucket and Eastern Pondmussel. Mussels were found here in open areas of the clean, sandy pond bottom.

This Core Habitat also supports one of three known populations of Bridle Shiner in the South Coastal Watershed. This fish Species of Special Concern is thought to be in decline in eastern Massachusetts as it was found at only 23% of its former sites in recent surveys. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes. This population of Bridle Shiner in Great Herring Pond has persisted since at least 1956. This pond also contains habitat for Alewife, a fish that spends much of its life in coastal waters but returns to freshwaters to spawn (breed).

Core Habitat LW340

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Crooked Pond is one of the few such ponds that has little surrounding development and is removed from cranberry agriculture. Crooked Pond is located within the Massasoit National Wildlife Refuge, and has a mostly undeveloped and protected Critical Supporting Watershed.

Core Habitat LW349

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Bumps Pond is one of the few such ponds that has little surrounding development and is removed from cranberry agriculture. Located within Myles Standish State Forest, the habitats of Bumps Pond may be threatened by water level drawdowns due to wells in the region.

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